

# The SSG Systems Engineering Process

*This brief overview of the Standard Systems Group (SSG) Systems Engineering Process (SEP) summarizes the primary objectives of the SEP. For complete information, see <http://web1.ssg.gunter.af.mil/sep/SEPver40/ssddview.html>.*

In May 1997, the SSG at Maxwell Air Force Base, Gunter Annex in Montgomery, Ala. was rated Level 3 according to the Software Engineering Institute Capability Maturity Model. SSG is one of the larger, more diverse government agencies to achieve this distinction. Continuous, sustained process improvements led to this maturity level, and the method by which it was achieved is embodied in the SEP, now in Version 4. A combination of management and engineering activities composes this standard organizational process that can be tailored to address project specifics.

The SEP is a pragmatic, disciplined approach to software systems engineering. It describes the essential elements of an organization's systems engineering process that must exist to ensure good systems engineering.

The SEP's goals for a product are to

- Meet customer's functional objectives.
- Minimize defects.
- Enhance look and feel of having been built by one person, though it does not depend on one person for maintenance.
- Reduce risk; eliminate rework.
- Improve predictable schedule and cost.
- Provide development insight.

- Enhance maintainability.
- Introduce industry best practices.
- Operationalize policies and directives.

Success in a market-driven and contractually negotiated market is often determined by how efficiently an organization translates customer needs into a product that meets those needs. Good systems engineering is key to that activity, and the SEP provides a way to define, measure, repeat, and enhance performance. The SEP acts as a framework to which continuous process improvement can be added.

Under the SEP, projects and systems experience productivity improvements of 200 percent to 300 percent, a hundredfold reduction in post-release defects, less overtime and fewer crises, a return on investment of up to a ratio of 7-to-1, reduced long-term sustainment costs, and improved interoperability. The employees also are able to feel more competitive.

The greatest benefit of the SEP is that it increases the ability to meet customer cost, schedule, and performance expectations.

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joining the SATC, he was vice president of Quong and Associates, a consulting firm specializing in quality engineering and assurance practices. He was responsible for aerospace industry software quality assurance standards and procedures. While manager of software engineering assurance in the Office of the Chief Engineer at NASA Headquarters, he established and directed the Software Management and Assurance Program, which produced NASA's first agency-wide software policies and standards. As a member of the Defense Communications Agency's National Military Command Systems Engineering Directorate, he was the project manager and systems engineer for the acquisition and development of several first-generation strategic command, control, and communications systems that support the

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